caused by changes of the astronomical elements of the earth (cf. Köppen and Wegener, footnote 6).

The motions caused by hydrostatic pressure continue, though diminishing a little according to the degree of spreading out of the continental layer. The distances between the different points of the continents must increase and the surface of the stretched regions must continue to sink. Probably the sinking of the western coast of Europe is an accompanying effect of these events. Finally stresses caused by the shrinking of the earth and the *Polflucht* forces accumulate until a new orogenic period begins and new mountain building sets in, in the neighborhood of the equator. It may be stated that there is a great difference between the events in the interior of the continental block,—for example, in Europe, where *Polflucht* forces and shrinking work together —and in the borders of the block,—the coast of the Pacific, where as in the case of America the shrinking stresses are compensated together with the hydrostatic movements which continue to act nearly unaltered.

BOTANY.—*A long lost* Phlox.[1] EDGAR T. WHERRY, Washington, D. C.

The herbarium of Samuel B. Buckley, now at the Missouri Botanical Garden in St. Louis, includes a specimen of *Phlox* labelled "Phlox No. 2, Mts. White Sulphur Springs, Va. June, 1838." This bears a superficial resemblance to *P. pilosa,* but closer examination shows that Buckley was right in declining to ascribe it to that or any other recognized species. How this striking plant escaped the attention of the many botanists who visited the region around White Sulphur Springs (now in West Virginia) during the subsequent three quarters of a century is a mystery, but the fact remains that it is not included in any collection made during that period to which the writer has had access, nor is it mentioned in Millspaugh's flora of the state. This *Phlox* was first rediscovered by Miss Marian S. Franklin of Lewisburg about 1919, and specimens collected by her near White Sulphur Springs are preserved in the Gray Herbarium (September 4, 1920, in fruit) and the herbarium of the University of Pennsylvania (May 22, 1922). It had been labeled *P. pilosa,* and when I first saw it in the field, during a vacation trip in 1923, the same misidentification was made. Early in June, 1929, on another visit to the region, in the company of Mr.

[1] Received December 15, 1929.

J. E. Benedict, Jr., its relationships were worked out, and several stations for it were discovered. The data obtained justify announcing it as an independent species, which seems appropriately named:

Phlox buckleyi Wherry, sp. nov.

Plant perennial, with one or more decumbent stems 3 to 20 cm. long, each bearing at the tip a closely set group of long narrow evergreen leaves, from the midst of which arises the erect flowering shoot, 15 to 40 cm. tall, with 3 to 7 nodes below the inflorescence; stem glabrous below and increasingly glandular-pubescent upward; leaves glabrate, or the upper more or less pubescent, opposite, the blades thickish, sessile, acuminate; lower leaves linear to somewhat lanceolate or oblanceolate, often ensiform, mostly 50 to 125 mm. long and 2 to 5 mm. wide, the upper ones ranging from short lanceolate at the base of the flowering shoot, to linear-lanceolate, up to 80 mm. long and 8 mm. wide, near the middle, and to broadly lanceolate, 40 mm. long and 12 mm. wide, toward the top; inflorescence a small to moderately large corymbose or somewhat paniculate group of cymes, densely glandular-pubescent; bracts similar to the uppermost leaves, rapidly decreasing in size upwards; pedicels short; calyx 7 to 13 mm. long, the sepals united to about 2/3 their length, tipped with short awns; corolla-limb bright purple, usually near phlox or mallow purple (Ridgway's 65 or 67 b), the eye somewhat paler and often bearing a purple 5-rayed star formed by deltoid patches of slightly deepened color toward the lobe-bases, the tube purplish violet to gray, glandular-pubescent; petals 25 to 35 mm. long, united to 2/3 their length, the tube thus 17 to 23 mm. long, the obovate to nearly orbicular lobes 8 to 12 mm. long and 7 to 10 mm. wide, terminally truncate and entire, slightly erose, or barely emarginate; stamens nearly as long as the corolla-tube, or one sometimes longer, the average distances from tube-orifice to anther tips being respectively 0, 0.5, 2.0, 3.5, and 5.0 mm.; anthers cadmium yellow or essentially so; styles 14 to 20 mm. long, united to within 1 mm. of the tip, the 3 stigmas lying in the midst of the anthers, or slightly exserted; ovules usually 2, but sometimes 1 or 3 per cell; capsule about 5 mm. long.

Type locality, White Sulphur Springs, Greenbrier County, West Virginia; type specimen collected by S. B. Buckley in June, 1838, in herbarium of Missouri Botanical Garden.

Thus far, six localities for *Phlox buckleyi* have been found, which, from west to east, are as follows: Greenbrier County, West Virginia,—$\frac{3}{4}$ mile southeast of Caldwell, $\frac{1}{4}$ mile south of White Sulphur Springs station (probably the site of Buckley's original collection), and $1\frac{1}{2}$ miles southeast of White Sulphur Springs village; Alleghany County, Virginia,—1 mile north of Alleghany station, $1\frac{1}{2}$ miles southeast of this station, and 1 mile southwest of Longdale Furnace. The maximum diameter of its recognized range is thus barely 40 miles (65 kilometers). The normal habitat at all these places is a thinly wooded slope toward the base of a hill of Devonian shale, the soil being usually a humus-rich gravel of subacid reaction.

Figure 1. *Phlox buckleyi* Wherry.

This very distinct species belongs in a different section of the genus from *P. pilosa,* which it resembles at first sight, as shown by the decumbent stems with evergreen terminal leaves, the well-united sepals, and the long stamens and styles. It is actually most closely related to *P. ovata,* which grows in the same region, but differs in the much narrower leaves, the abundant glandular pubescence, and the double ovules; moreover, even where intimately associated, the two show no tendency to intergrade or to hybridize. Its aspect is brought out by the two photographs reproduced on page 27, the upper representing a habitat view taken at the locality southeast of Caldwell, West Virginia, June 1, 1929, and the lower a group of pressed specimens from the same place, × $\frac{3}{10}$. The highly distinctive tufts of ensiform leaves suggest, as a common name for the species, Swordleaf Phlox.

PROCEEDINGS OF THE ACADEMY AND AFFILIATED SOCIETIES

PHILOSOPHICAL SOCIETY

The 995th meeting was a joint meeting with the Geological Society of Washington, and was held in the auditorium of the Interior Department building, Wednesday, October 23, 1929, with Vice-President Lambert of the Philosophical Society in the chair.

The program of the evening consisted of an illustrated address by Dr. Beno Gutenberg, Professor of Geophysics at the University of Frankfurt-am-Main, on "*Some hypotheses on the development of the Earth's crust*" (published in this number). It was discussed by Messrs. Bowie and Heck.

The 996th meeting was held in the Cosmos Club Auditorium, November 9, 1929.

The program of the evening consisted of two illustrated communications:

P. R. Heyl, V. L. Chrisler, and W. F. Snyder. *Absorption of sound at oblique angles of incidence.*—The effect of oblique angles of incidence upon the sound absorption of a substance is a point concerning which there has been up to the present time no experimental evidence. Paris has published a theoretical discussion leading to a formula which indicates that as we pass from normal incidence to grazing incidence the absorption should increase considerably, being about 50 per cent greater at 60°.

Experiments recently performed at the Bureau of Standards appear to show that the absorption of sound is independent of the angle of incidence.

It seems probable that the error in Paris' discussion is due to the fact that sound absorption is produced by friction, converting sound energy into heat. Friction is likely to produce rotational motion in fluids, and where rotational motion exists there can be no velocity potential. In consequence, the customary differential equation for sound motion, in which the dependent variable is the velocity potential, fails to hold in a region of sound absorption. (*Authors' abstract.*) Discussed by Humphreys, Hulburt, Littlehales, Gish, Pawling, and others.